

WHAT IS CLAIMED IS:

1. A beam irradiation apparatus comprising:
means for scanning an energy beam output continuously from one end to
5 the other end on an object to be irradiated; and
means for blocking the beam in the one end and in the other end thereof.
2. A beam irradiation apparatus comprising:
means for scanning an energy beam output continuously from one end to
10 the other end on an object to be irradiated; and
means for blocking the beam in the one end and in the other end thereof in
synchronization with the means for scanning.
3. A beam irradiation apparatus comprising:
15 a plurality of means for scanning a plurality of energy beams output
continuously from one end to the other end on an object to be irradiated; and
a plurality of means for blocking the plurality of beams in the one end and
in the other end respectively.
- 20 4. A beam irradiation apparatus comprising:
means for scanning an energy beam output continuously from one end to
the other end on an object to be irradiated; and
means for blocking the beam in the one end and in the other end,
wherein the means for scanning has a specular body having a plane surface
25 or a curved surface,
wherein the specular body is fixed to a shaft so as to be arranged on an
optical axis of the beam, and
wherein the specular body vibrates using the shaft as its center.
- 30 5. A beam irradiation apparatus comprising:

means for scanning an energy beam output continuously from one end to the other end on an object to be irradiated; and

means for blocking the beam in a position where the scanning starts and in a position where the scanning ends,

5 wherein the means for scanning has a specular body having a plane surface or a curved surface,

wherein the specular body is fixed to a shaft so as to be arranged on an optical axis of the beam, and

wherein the specular body rotates using the shaft as its center.

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6. A beam irradiation apparatus according to claim 4 or 5, wherein the shaft has a bearing bar provided in the one end portion or in the opposite end portions thereof.

15 7. A beam irradiation apparatus according to any one of claims 4 or 5, wherein one specular body is provided.

8. A beam irradiation apparatus according to any one of claims 1 to 5, wherein means for moving the beam and the object to be irradiated relatively is
20 provided.

9. A beam irradiation apparatus according to claim 8, wherein the means for moving has a control apparatus for controlling so as to move in synchronization with the means for scanning.

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10. A beam irradiation apparatus according to any one of claims 1 to 5, wherein the energy beam is a beam output from a laser selected from the group consisting of a YVO₄ laser, a YAG laser, a YLF laser, a YAlO₃ laser, and an Ar laser.

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11. A beam irradiation apparatus according to any one claims 1 to 5, wherein an optical system for shaping the energy beam into a linear shape is provided between the beam oscillator and the means for scanning.

5 12. A beam irradiation apparatus according to any one of claims 1 to 5, wherein the means for blocking the beam is arranged in a vicinity of the means for scanning.

13. A beam irradiation apparatus according to any one of claims 1 to 5,
10 wherein the means for blocking the beam is arranged in a vicinity of the object to be irradiated.

14. A beam irradiation apparatus according to any one of claims 1 to 5, wherein the means for blocking the beam is a light-blocking plate having a reflector
15 for reflecting the beam or an absorber for absorbing the beam.

15. A beam irradiation apparatus according to claim 14, wherein a rectangular opening is provided in the light-blocking plate.

20 16. A beam irradiation apparatus according to claim 15, wherein the rectangular opening has a length from 3 to 30 cm in a direction of its major axis.

17. A beam irradiation apparatus according to any one of claims 1 to 5, wherein an f θ lens is arranged between the means for scanning and the object to be
25 irradiated.

18. A beam irradiation apparatus according to any one of claims 1 to 5, wherein a telecentric f θ lens is arranged between the means for scanning and the object to be irradiated.

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19. A beam irradiation method comprising:
irradiating while scanning an energy beam output continuously on an
object to be irradiated,

wherein the beam is blocked in a position where a scanning direction of the
5 beam changes.

20. A beam irradiation method comprising:
irradiating while scanning an energy beam output continuously on an
object to be irradiated,

10 wherein the beam is blocked in a position where the scanning of the beam
starts and in a position where the scanning thereof ends.

21. A beam irradiation method comprising:
irradiating while scanning an energy beam output continuously and an
15 object to be irradiated relatively,

wherein the object to be irradiated is processed by the beam reflected in
order on a plurality of specular bodies,

wherein the relative positions of the beam and the object to be irradiated
are set every time the specular body reflecting the beam changes, and

20 wherein the beam is blocked in a position where the scanning of the beam
starts and in a position where the scanning thereof ends.

22. A beam irradiation method according to any one of claims 19 to 21,
wherein the means for scanning the energy beam output continuously has a
25 galvanometer mirror or a polygon mirror.

23. A beam irradiation method according to any one of claims 19 to 21,
wherein the energy beam output continuously is a beam emitted from a laser
selected from the group consisting of a YVO₄ laser, a YAG laser, a YLF laser, a
30 YAlO₃ laser, and an Ar laser.

24. A method for manufacturing a thin film transistor comprising:
forming a crystalline semiconductor film by irradiating an energy beam
output continuously while scanning the energy beam on a semiconductor film;
5 forming a gate electrode over the crystalline semiconductor film; and
forming an impurity region over the crystalline semiconductor film using
the gate electrode as a mask,
wherein the beam is blocked in a position in which a scanning direction of
the beam changes on the semiconductor film.

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25. A method for manufacturing a thin film transistor comprising:
forming a crystalline semiconductor film by irradiating an energy beam
output continuously while scanning the energy beam on a semiconductor film;
forming a gate electrode over the crystalline semiconductor film; and
15 forming an impurity region over the crystalline semiconductor film using
the gate electrode as a mask,
wherein the beam is blocked in a position where a scanning of the beam
starts and in a position where the scanning thereof ends.

20 26. A method for manufacturing a thin film transistor according to claim 24
or 25, wherein the means for scanning has a galvanometer mirror or a polygon
mirror.

27. A method for manufacturing a thin film transistor comprising:
25 forming a crystalline semiconductor film by using a beam irradiation
apparatus, the beam irradiation apparatus comprising means for scanning an energy
beam output continuously from one end to the other end on an object to be
irradiated, and means for blocking the beam in the one end and in the other end,
forming a gate electrode over the crystalline semiconductor film; and
30 forming an impurity region in the semiconductor film by using the gate

electrode as a mask.

28. A method for manufacturing a thin film transistor comprising:

forming a crystalline semiconductor film by using a beam irradiation
5 apparatus, the beam irradiation apparatus comprising means for scanning an energy
beam output continuously from one end to the other end on an object to be
irradiated, and means for blocking the beam in the one end and in the other end in
synchronization with the means for scanning;

forming a gate electrode over the crystalline semiconductor film; and

10 forming an impurity region in the semiconductor film by using the gate
electrode as a mask.

29. A method for manufacturing a thin film transistor comprising:

forming a crystalline semiconductor film by using a beam irradiation
15 apparatus, the beam irradiation apparatus comprising a plurality of means for
scanning a plurality of energy beams output continuously from one end to the other
end on an object to be irradiated, and a plurality of means for blocking the beams in
the one end and in the other end;

forming a gate electrode over the crystalline semiconductor film; and

20 forming an impurity region in the semiconductor film by using the gate
electrode as a mask.

30. A method for manufacturing a thin film transistor comprising:

forming a crystalline semiconductor film by using a beam irradiation
25 apparatus, the beam irradiating apparatus comprising means for scanning an energy
beam output continuously from one end to the other end on an object to be
irradiated, and means for blocking the beam in the one end and in the other end,
wherein the means for scanning has a specular body having a plane surface or a
curved surface, wherein the specular boy is fixed to a shaft so as to be arranged on
30 an optical axis of the beam, and wherein the specular body vibrates by using the

shaft as its center,

forming a gate electrode over the crystalline semiconductor film; and

forming an impurity region in the semiconductor film using the gate electrode as a mask.

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31. A method for manufacturing a thin film transistor comprising:

forming a crystalline semiconductor film by using a beam irradiation apparatus, the beam irradiating apparatus comprising means for scanning an energy beam output continuously from one end to the other end on an object to be
10 irradiated and means for blocking the beam in the one end and in the other end, wherein the means for scanning has a specular body having a plane surface or a curved surface, wherein the specular body is fixed to a shaft so as to be arranged on an optical axis of the beam, and wherein the specular body rotates by using the shaft as its center;

15 forming a gate electrode over the crystalline semiconductor film; and

forming an impurity region in the semiconductor film using the gate electrode as a mask.

32. A method for manufacturing a thin film transistor according to any one
20 of claims 27 to 31, wherein the energy beam output continuously is a beam emitted from a laser selected from the group consisting of a YVO₄ laser, a YAG laser, a YLF laser, a YAlO₃ laser and an Ar laser.

33. A method for manufacturing a thin film transistor according to any one
25 of claims 24, 25 and 27 to 31, wherein the thin film transistor is incorporated into at least one selected from the group consisting of a display, a mobile computer, a game machine, and an electronic book reader.